

point committees to get together on a program in respect to the problems in which we have a common interest. That proposal would seem to be just as logical in California as on the national level. For our part we offer our coöperation and every assistance we can give to such a movement.

In a recent article, John Bart Lauricella, M. D., President, Section of Industrial Medicine and Surgery, Pan American Medical Association, pays a tribute to Vocational Rehabilitation in summing up how that service may supplement medical treatment. He says:

"It is indeed fortunate for the industrial worker, as it is also for society, that trained lay experts have been attracted to this most important field of social welfare. Without them, the job of the surgeon would be but half-done, and probably would fall far short of any real accomplishment. Without them, the painstaking efforts of the doctor might prove to be in vain. To them we owe much for the diligent manner with which they view their jobs—for their great patience with these most troublesome cases—and for their noble and painstaking efforts, perseveringly applied until a satisfactory or optimum result is obtained." (National Rehabilitation News, January, 1944.)

We shall try to live up to Dr. Lauricella's encomium, and we place at your disposal our every aid in the common problem of occupational adjustment of the disabled.

California Bureau of Vocational Rehabilitation.

TREATMENT OF ACUTE NAVAL CASUALTIES*

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ON August 9, 1942, without advance warning, over two hundred acute naval casualties were received aboard the U.S.S. ——— in a period of about two hours. These patients were suffering from injuries received in the first Savo Island naval engagement. They were transferred aboard the vessel from destroyers which had, within the previous six or seven hours, rescued them from sunken or damaged ships. Many of these patients had spent from four to six hours in the water, held afloat by their life preservers, wreckage, or small rafts. At the time they were picked up by the destroyers, treatment was rendered the most severely wounded. This usually consisted of the injection of one-half grain of morphine and then the first-aid care of their wounds. The wounds were simply sprinkled with a sulfa drug and a sterile gauze dressing applied. Fractures were immobilized by leaving the patient on the deck and fixing the extremity in as comfortable a position as possible. There was no time for the administration of blood plasma.

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We also received aboard nineteen Japanese prisoners, nine of whom were injured survivors from planes which had attacked us the previous day, and of which six were suffering from burns of various degrees, but chiefly of the hands and face; their aviation dress and helmets having provided adequate protection for the major portion of their body and extremities.

The medical organization aboard the U.S.S. ——— consisted of three medical officers and thirteen corpsmen. Four additional medical officers, and eighteen additional corpsmen came aboard with the wounded, as uninjured survivors. In preparation for such emergencies three operating theaters had been prepared, and one of the ship's medical officers was assigned to each. In this emergency, however, and in view of the fact that additional medical personnel were also received, the senior medical officer took charge of the general assorting and distribution of the wounded, corpsmen's details and other administrative problems; another medical officer was assigned to supervise the general and supportive treatment; and the remaining medical officers were divided between the three surgeries.

HOW PATIENTS WERE GROUPED

The patients were grouped roughly into three classes: (1) gunshot wounds of the soft tissue; (2) compound and simple fractures; and (3) burns. The order of treatment was adjudged according to the urgency required, and the beneficial effect expected. Although one station had been reserved primarily for the treatment of burns and another for fractures, due to the fact that 84 per cent of the wounds received were caused by metal fragments, involving various degrees of soft-tissue damage, the three operating theaters were all handling this type of injury.

We received thirty-one burns, most of which were first and second degree; eleven compound and six simple fractures; one hundred and sixty-one patients with wounds involving the soft tissue only, most of which were multiple; one penetrating wound of the abdomen, and one penetrating wound of the chest.

Burns were treated by the application of tannic acid jelly, followed with a covering of cellophane; and over this was applied a dry gauze dressing. Burns about the face were treated only by the application of tannic acid jelly, and left exposed.

Soft tissue wounds were first cleansed with soap and water, and then lavaged with saline, debrided, and the metallic fragment if accessible removed. This was often found to have carried in with it portions of clothing and kapok which also required removal. A few of the soft-tissue wounds were at first closed loosely with interrupted nonabsorbable suture; but this soon proved impractical because of the length of time from the primary injury. We therefore simply relied on superficial debridement, local application and daily oral administration of a sulfa drug, packing the wound with plain gauze and a gauze

dressing. Later all wounds that seemed would be better immobilized were redressed and incased in plaster, and were not again dressed.

The soft-tissue wounds of compound fractures were treated the same as other soft-tissue wounds. The metallic fragments were usually more difficult to locate, and x-ray films were frequently taken. Particular care was exercised in removing any foreign material or detached bone fragment which would later become necrotic and lead to bone infection. Wounds were sprinkled with sulfanilamide or sulfathiazole, packed loosely with plain gauze, and immobilized in plaster. In fractures of the leg and lower portion of the femur, the pin-and-plaster technique (placing a through-and-through pin proximal and distal to the fracture and incasing the extremity in plaster) was used, when possible. We were fortunate in having a mechanical reduction apparatus aboard, and this proved invaluable in the treatment of fractures which could be immobilized by this method. Fractures of the lower extremity, in which plaster fixation was not applicable, were immobilized in fixed skeletal traction, using a Thomas leg splint.

The treatment of simple fractures was delayed for about three days because we felt that these could wait without harm, and it gave us an opportunity to devote our attention to those requiring more urgent care. Here, again, the pin-and-plaster technique was employed with excellent results.

All the wounded patients received oral sulfathiazole medication, which was continued for the five days they were aboard. Morphine in one-half grain doses was administered freely. At first we had planned to keep a record of the frequency of the injections given, but in the rush we found this impractical. Our criterion for repeating the dose was purely the clinical appearance of the patient. In one instance, in which an apparent over-dose appeared to have been given, it seemed to work to the clinical improvement of the patient. Plasma was used freely in both shock and in marked blood-loss. We found the liberal use of morphine our most valuable aid in combating shock, and felt that our results from the use of plasma were not as dramatic as we had expected. It seemed to have no beneficial effect in those who had suffered profound blood loss, and did not compare favorably with morphine in the treatment of shock. For marked blood-loss, whole blood transfusions were later given with definite beneficial effect; but for the first three days we did not have time for this procedure.

We received no patients suffering from penetrating wounds of the skull, and only one each of the chest and abdomen. The patient with the abdominal wound, died later despite an exploratory laparotomy. The absence of such cases can be explained by the fact that most of those who had received these wounds did not live long enough to be rescued and brought aboard, and explains our high percentage of extremity and soft-tissue body wounds.

At first, ether was used for anesthesia; but we soon found sodium penothal equally effective, much more convenient, more rapidly administered, and associated with a much more favorable postoperative reaction. In minor cases, no anesthetic was required in addition to the one-half grain doses of morphine which was administered preoperative. Although most of the patients were suffering from multiple fragmentary wounds, most of the fragments could be easily found with a probe, grasped with a strong forceps and removed without much discomfort. Many of the fragments were lying partially exposed in the wound, and were not deeply imbedded. It was not unusual to remove five or six such fragments from one individual. The fragments varied in size from very small specks to pieces about six inches in length. All were very irregular, and their edges were usually quite sharp. These wounds were usually fairly clean, did not show much evidence of the tissues being devitalized, unless the wound was extensive, and thus, as a rule, required only very minor debridement. The cleanliness of the wounds was due to the fact that they were produced by clean metallic fragments, and had no opportunity for soil contamination. Some, however, in those who had been rescued from the sea, had their wounds contaminated with a dark oily skum; but unless the tissues were definitely devitalized, no extensive debridement was undertaken. Such wounds were simply sprinkled with a sulfa drug and packed with gauze.

Most of our second, and all of our third degree burns showed some evidence of superficial infection by the fourth day. In no case was an eschar produced by the use of tannic acid jelly. It produced a brown discoloration of the skin, acted as a clean protective medication, and facilitated redressings, but did not seem to protect the burned area from infection. The cellophane, in numerous instances, became adherent to the wound, and made redressings very painful. It was not perforated, and thus did not allow sufficient escape of the fluid accumulation. We were not impressed by our treatment of burns.

Our patients were all transferred on the fifth day and, therefore, we had not had them under observation long enough to properly evaluate our methods of treatment. By the fourth or fifth day, most of the extensive wounds, in which we had thought it not advisable to do anything other than sprinkle with a sulfa drug and protect with a gauze dressing, were showing evidence of infection and necrosis of devitalized tissue. In many of these the sulfa drug had been applied in excessive amounts and had formed what appeared to be an irritative foreign body. At least the presence of the sulfa drug, in large amounts, seemed to have no influence on the extent of superficial wound infection in the presence of necrotic tissue. Most of the other wounds looked good, but we felt that probably a high percentage of these would later show evidence of at least superficial infection. It was surprising to observe the rapid clinical improvement occurring in the

first three days. Most of our bed patients had by then become ambulatory, especially those with injuries involving the upper extremities, and the need for morphine showed a marked decline. Only those who were severely injured still showed any evidence of shock. Despite the large number of wounded and the extent of their wounds, we had no psychological problems.

Plaster of Paris was used freely. Wounds of any great size were immobilized, either by splints or light circular casts, whenever possible. This added greatly to the comfort of the patient and, we believe, must have hastened the wound-healing.

COMMENT

Of the sixteen patients who died, all but one expired in the first forty-eight hours, and over one-half in the first twelve. Most of the deaths were due to multiple fragmentary wounds with severe loss of tissue and profound shock. In only one was operative treatment given, it not being felt that it would be of value in the others. No amputations were performed, but two traumatic amputations of a major extremity were received. One had a disarticulation at the knee and was in such deep shock that no further surgery was attempted; and despite supportive treatment including large doses of morphine and three units of plasma, the patient expired in a few hours.

Since many of the wounded had been rescued with difficulty, facilities for treatment very limited, and the hazards and suffering which they had to go through, before being received aboard easily explains why many were not in physical condition to withstand further handling. The relief from pain and the associated shock were considered the most urgent. No radical procedures, therefore, were undertaken, nor was any elective reconstructive surgery attempted. Except for a few instances, first-aid surgery was all that we felt it advisable to do.

We received aboard several hundred non-wounded survivors, in addition to their medical personnel already mentioned. These proved invaluable in helping us render aid to the wounded. Many freely volunteered their services, and thereby greatly relieved the available hospital corpsmen. It should also be mentioned that these same members of the ship's company had been responsible for the saving of many lives prior to being received on board. During the naval engagement, the casualties occurred so rapidly that no medical personnel could possibly have been so omnipresent as to be available to treat them all. Time, the compartmentation of the ship, the rapidity of the casualties, the rapidity in which the ships sank, the darkness, and many other factors made it necessary that the uninjured survivors render first aid to their own wounded if any was to be given. For this reason it is felt that the importance of the knowledge of first-aid among the members of a ship's company should be widely understood, and that it is paramount that they receive adequate and repeated instruction in at least the principles involved.

IN CONCLUSION

Although it might appear that one cannot do justice to such a large number of acute casualties in such a short space of time, we were greatly impressed by the rapid general clinical improvement which occurred in the first five days that they were aboard, and we feel that most of this improvement was due to recovery from their primary shock, and that it was too early for any toxemia to have developed from a severe infection. We were also impressed by the result obtained by conservative surgery, namely, not attempting anything that would add greatly to the shock of an already severely shocked patient, until adequate recovery had occurred. Most of our injured were compelled to lie on the deck on a stretcher until they were taken to surgery, and from there placed in their respective bunks. This delay, in most instances, was not harmful. They were not excessively handled, their complaints were given attention, sedation and oral fluids were administered freely, and much needed rest and nourishment was provided; and these factors we feel were largely responsible for any of the beneficial results obtained.

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FOOD POISONING DUE TO CUSTARD FILLED PASTRY: REPORT OF OUTBREAK

CAUSATIVE ORGANISM, *B. TYPHI-MURIUM*

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AND

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WITHIN a six-day period, from March 24 through March 30, 1944, there were reported 69 cases of food poisoning in San Francisco. The symptoms were vomiting, nausea, diarrhea, with chills and often fever. The onset period varied from three to seven hours after the suspected food was consumed.

Fifty-one of the persons afflicted partook of food at a church dinner, and the remaining eighteen were from six unrelated families residing in different residential areas of the city. All except one case gave a history of having eaten custard-filled eclairs. Epidemiologic investigation disclosed that all of the pastry was purchased from bakery "A." This firm manufactures all products in a central plant, and distributes through nine retail stores, six of which were outlets for the contaminated food involved in this outbreak.

All case histories definitely indicated that the causative food was purchased on March 22, 1944. The first case of illness was reported during the late afternoon of March 24th. The late reporting precluded the possibilities of obtaining specimens of the causative materials or stool specimens from victims. There were, however, two excep-

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